

REMARKS

Claims 10-20 are pending. Claims 10-20 stand rejected. Claim 10 has been amended for clarity to indicate that the water-soluble resin is not the same as the amphoteric urethane resin. Support for this amendment is found, for example, at p. 1, lines 5-15; p. 15, line 3 – p. 18, line 10; and p. 23, line 16 – p. 24, line 18. No new matter is introduced with these amendments.

Reply to the Rejection of Claims 10, 14, 15, 17, 18 and 20 under 35 U.S.C. § 103(a)

Claims 10, 14, 15, 17, 18 and 20 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Publication No. 2002/0071811 to Bhatt *et al.* (“Bhatt”) in view of U.S. Patent No. 6,335,003 to Kim *et al.* (“Kim”). Specifically, the Examiner states –

The instant invention is directed toward a composition comprising an amphoteric urethane resin having at least one carboxyl group and at least one tertiary amino group in one molecule, and a water-soluble resin.

Bhatt *et al.* teach hair spray compositions containing a carboxylated polyurethane. The polyurethane contains polyoxyalkylene units, such as polyoxyethylene soft segments which impart hydrophobicity to the polyurethane. Amines, such as ethylene diamine, propylenediamine, monoethanolamine, and diglycolamine, can be added to the polyurethane resin reaction mixture.

The carboxylated polyurethane resins are soluble in ethanol/water mixtures. The reference lacks tertiary amines. See abstract; (0024J-(0025); (00361); (0050). Kim *et al.* teach cosmetically acceptable polyurethane resins. The polyurethanes are formed from at least one diisocyanate or reaction product thereof with one or more compounds containing two or more active hydrogen atoms per molecule, and at least one diol, primary or secondary amino alcohol, primary or secondary diamine or primary or secondary triamine each with one or more tertiary, quaternary or protonated tertiary amine nitrogen atoms. Propylene diamine is taught as a suitable diamine. The polyurethanes resins are taught as beneficial because of their flexibility and decrease of stickiness and brittleness when applied to the hair.

Hairsprays and hair setting lotions are taught as preferred forms of the compositions. See abstract, Col. 1, line 41-Col. 2, line 11, * Col. 2, line 58-line 65*, Col. 7, line 57-Col. 8, line 7.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the tertiary amines taught by Kim *et al.* for the amines taught by Bhatt *et al.* because of the expectation of achieving a hair spray formulations that in addition to imparting excellent set retention to the hair, as taught by Bhatt, additionally decrease the stickiness and brittleness of the product when applied to the hair and maintain elasticity. Furthermore, it would have been

obvious to one of ordinary skill in the art at the time the invention was made to substitute the tertiary amines taught by Kim et al. for the amines taught by Bhatt et al. because Bhatt et al. teach diamines as part of their resins and Kim et al. teach diamines as interchangeable with tertiary amines in polyurethane resins for application to the hair.

It is respectfully pointed out that a) the carboxyl group and tertiary amine of the combined polyurethane resin result in an amphoteric resin, and that b) the combined resin is a water-soluble resin.

For the following reasons, Applicants respectfully traverse the Examiner's rejection of claims 10, 14, 15, 17, 18 and 20 as being unpatentable over Bhatt in view of Kim.

Bhatt teaches aerosol and non-aerosol hair spray compositions containing hydrophilic, carboxylated polyurethane resins (p. 2, ¶ 0016; p. 3, ¶ 0030). The carboxylated polyurethane resin is produced by the reaction of (a) a polyoxyalkylene diol; (b) an alkylene glycol; (c) a diisocyanate; (d) water in an amount of about 0.001% to about 0.95% of the combined weight of the reactants; and (e) a 2,2-di(hydroxymethyl)alkanoic acid, wherein the ratio of NCO (isocyanate) groups to OH (hydroxyl) groups in the water, diol, and glycol mixture is about 0.4 to about 1.1 (p. 2, ¶ 0023; p. 3, ¶¶ 0034 and 0035; claim 1). An amine, such as diglycol amine, can be substituted for at least a portion of the water in the reaction mixture (p. 3, ¶ 0034; p. 4, ¶¶ 0036 and 0037; Polyurethane Resin W Example). Bhatt does not teach or suggest tertiary amines, and states that primary amines (monoethanol amine and/or diglycol amine) are preferred (p. 4, ¶ 0037). Therefore, Bhatt provides no motivation to one skilled in the art to seek use of tertiary amines. Also, as the process that Bhatt uses in preparing its polyurethane resin differs from the process of the present invention, the resultant resins are compositionally different (see, e.g., p. 4, line 4 – p. 5, line 3 of the present Specification).

Further, Bhatt does not teach or suggest hair spray compositions that include both a water-soluble resin and the amphoteric urethane resin having at least one carboxyl group and at least one tertiary amino group in one molecule (see, e.g., p. 12, ¶ 0120 of Bhatt providing examples of aerosol and non-aerosol hair spray compositions). More specifically, with reference to the presently amended and claimed invention, Bhatt does not teach or suggest water soluble resins that improve the durability (see p. 26 of the present Specification) of a cosmetic composition, particularly in combination with an amphoteric resin.

Kim teaches cosmetic compositions containing cationic polyurethanes and polyureas. Kim is relied upon by the Examiner for its teachings of polyurethane resins wherein diamines

and tertiary amines are taught as interchangeable, and therefore one skilled in the art would be motivated to substitute the diamines of Bhatt with the tertiary amines of Kim. This is an improper combination of references. As shown above, Bhatt does not teach or suggest tertiary amines, and prefers primary amines, and therefore teaches away from seeking elsewhere (provides no motivation to look to another reference such as Kim) for substitutes for diamines (*i.e.*, tertiary amines).

Further, both Kim and Bhatt do not teach or suggest a cosmetic composition that includes both the amphoteric urethane resin having at least one carboxyl group and at least one tertiary amino group in one molecule and a second water-soluble resin other than an amphoteric urethane resin wherein both resin together provide durability and good feel to a cosmetic composition (see, *e.g.*, Formulations A-C of Kim provided in the Example, which suggest formulations containing only the cationic polyurethane resin of Kim). As such, Kim adds nothing to Bhatt as neither reference, alone or in combination, teaches or suggests the use of their polyurethane resins in combination with a second water-soluble resin wherein both resins function collectively to provide improved feel and durability in a cosmetic composition.

Durability is not provided by amphoteric urethane resins, but instead is provided by other water soluble resins. Bhatt seeks to replace such resins (*e.g.*, vinyl and acrylic-based resins) in its hair spray compositions (p. 2, ¶¶ 0012, 0013 and 0015). Good and/or natural touch or feel is not provided by water soluble resins, but is provided by amphoteric urethane resins. The present invention provides both properties by providing a cosmetic composition that provides both components (amphoteric urethane resins and water soluble resins other than amphoteric urethane resins) in a single formulation. In order for the art to render such a solution to the problem of providing both durability and feel in a single cosmetic composition, the art must teach or suggest such a blended composition. As has been shown above, neither Bhatt nor Kim, alone or in combination, teach or suggest such a blended composition as a solution to the problem which the present invention solves.

Regarding the Examiner's reference to Bhatt's teachings that its formulations can contain plasticizers (p. 6, ¶ 0068), it is well known in the art that plasticizers are added to cosmetic formulations to aide in processing and/or make polymers soft and pliable. Plasticizers such as glycerin, silicones, emollients, lubricants and penetrants taught by Bhatt are typically added for

moisturization or providing a soft feel, not enhancing durability like the water soluble resins of the present invention.

For at least all of the above reasons, neither Bhatt nor Kim, alone or in combination, teach or suggest the presently claimed composition, particularly the combination of the amphoteric resin having at least one carboxyl group and at least one tertiary amino group in one molecule and the water-soluble resin, and therefore cannot be said to render the present invention obvious.

It is believed that these remarks overcome the Examiner's rejection of claims 10, 14, 15, 17, 18 and 20 under 35 U.S.C. § 103(a). Withdrawal, therefore, of the rejection of these claims is respectfully requested.

Reply to the Rejection of Claims 11-13, 16 and 19 under 35 U.S.C. §103(a)

Claims 11-13, 16 and 19 are rejected under 35 U.S.C. §103(a) as being unpatentable over Bhatt and Kim as applied to claims 10, 14, 15, 17, 18 and 20 above, and further in view of U.S. Patent No. 5,972,354 to de la Poterie *et al.* ("de la Poterie") and U.S. Patent No. 5,100,658 to Bolich *et al.* ("Bolich"). Specifically, the Examiner states -

Bhatt *et al.* and Kim *et al.* are applied as discussed above. The references lack a polysiloxane bond and anionic, nonionic, and cationic resins.

de la Poterie *et al.* teach cosmetic compositions comprising film-forming polymers. Polycondensates, such as anionic, cationic, nonionic, or amphoteric polyurethanes and mixtures thereof are taught as film-forming polymers. The polyurethane is taught as comprising at least one silicone-containing block. The instant films are taught as supple, flexible, elastic, and as not substantially lifting off once applied. See Col. 2, line 17-line 62; Col. 3, line 3-Col. 4, line 42.

Bolich *et al.* teach silicones, in the form of resins, as hair conditioners. See Col. 13, lines 56-65; Col. 9, lines 51-53.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the silicone containing blocks of a polyurethane resin, taught by de la Poterie *et al.* to the polyurethane resin of the combined references because of the expectation of achieving a polyurethane resin that imparts conditioning properties to the hair, as taught by Bolich *et al.*

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add anionic, cationic, or nonionic polyurethane resins, as taught by de la Poterie *et al.*, to the composition of the combined references because the combined references teach amphoteric polyurethanes and de la Poterie *et al.* teach anionic, cationic, nonionic, and amphoteric polyurethane resins as combinable and because of the expectation of achieving compositions with

films that are supple, flexible, elastic, and do not substantially lift off once applied.

For the following reasons, Applicants respectfully traverse the Examiner's rejection of claims 11-13, 16 and 19 as being unpatentable over Bhatt and Kim as applied to claims 10, 14, 15, 17, 18 and 20 above, and further in view of de la Poterie and Bolich.

Bhatt and Kim were discussed previously, those arguments being incorporated herein. As shown above, neither Bhatt nor Kim teach or suggest a cosmetic composition that includes a blend of an amphoteric polyurethane resin having at least one carboxyl group and at least one tertiary amino group in one molecule and a water-soluble resin other than an amphoteric urethane resin, wherein the blend of the amphoteric urethane resin and water soluble resin provide a cosmetic resin having both touch and durability versus a cosmetic composition having only a water-soluble resin or an amphoteric urethane resin. In this respect, neither Bhatt nor Kim provides motivation to one skilled in the art to combine those two components in a cosmetic composition. Further, as shown above, Bhatt teaches away from the use of tertiary amines.

de la Poterie is cited by the Examiner for its teaching of polyurethane copolymers comprising at least one silicone-containing block (col. 3, lines 16-28). (The SANCURE and NEOREZ polymers provided in Example 1 of de la Poterie are polyester- or polyether-polyurethanes (*i.e.*, no silicone-containing polyurethanes are exemplified). de la Poterie does not teach or suggest that its polyurethanes have both at least one carboxyl group and at least one tertiary amino group in one molecule. Further, de la Poterie does not teach or suggest a cosmetic composition that includes a blend of an amphoteric polyurethane resin having at least one carboxyl group and at least one tertiary amino group in one molecule and a water-soluble resin. For at least these reasons, de la Poterie adds nothing to Bhatt and/or Kim. Even in combination, the references fail to teach the present invention.

Bolich is cited by the Examiner for teaching silicones in the form of resins as hair conditioners. Bolich discloses a vehicle system or rheological modifier for delivering an active that includes at least two water-soluble thickening polymers and a solvent (col. 3, lines 1-28). The first or primary thickener is a nonionic water-soluble polymer, most preferably a nonionic long chain alkylated cellulose ether (col. 3, line 52 – col. 5, line 43). The second thickener is a water-soluble polymer having a molecular weight greater than 20,000 and which forms a clear solution in water at 25°C and 1% concentration, preferably natural polysaccharides (col. 5, line 45 – col. 6, line 13).

Still, Bolich does not teach or suggest amphoteric urethane resins having at least one carboxyl group and at least one tertiary amino group in one molecule and further comprising at least one polysiloxane bond. Further, Bolich provides no suggestion or motivation to one skilled in the art to include such amphoteric urethane resins in its compositions. For at least these reasons, Bolich adds nothing to Bhatt and/or Kim.

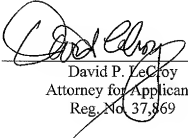
Further, it should be noted that the primary reference Bhatt does not suggest the need or desire for a silicone-containing bond in its polyurethanes. Therefore, Bhatt provides no motivation to one skilled in the art to seek for such modifications to its polymers. Nevertheless, without claiming such motivation to exist, even if one were to be motivated to combine the references, their combination still fails to teach the present invention, specifically, a cosmetic composition comprising a blend of a water soluble resin and an amphoteric urethane resin having at least one carboxyl group and at least one tertiary amino group in one molecule.

It is believed that these remarks overcome the Examiner's rejection of claims 11-13, 16 and 19 under 35 U.S.C. § 103(a). Withdrawal, therefore, of the rejection of these claims is respectfully requested.

Based on the above amendments and remarks, allowance of the claims is believed to be in order, and such allowance is respectfully requested.

Respectfully submitted,

Dated: 7 March 2006
NATIONAL STARCH AND CHEMICAL
COMPANY
Post Office Box 6500
Bridgewater, New Jersey 08807-0500
Phone 908.683.5433
Fax 908.707.3706


David P. LeCroy
Attorney for Applicants
Reg. No. 37,869